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NEW GROWTH REGULATORS FOR PLANTS; THEIR EFFECTS AND USES

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/A great portion of the information contained in the article was based either on old and generally known and available German data or on contemporary American material. Therefore, only those sections of the article were selected, which refer to recent work carried out in Germany and probably not yet known in the US./

To replace the rather ineffective old chemicals used for preserving stored potatoes, new chemical growth-inhibiting materials in powder form have been developed. Among them are the following: Agermin, produced by VVB Organa, Fahlberg-List, Magdeburg, and by Dr Goeze at Wolfenbuettel; Keimex and Bikartol, produced by VVB Pharma Schering, Adlershof; Depon, produced by the Hoechst Dyestuff Works; Belvitan K, Bayer Works; and Rhizophone C, Dutch Product. They all contain small amounts of substances which strongly affect the sprouting and respiration of potatoes. Potatoes are merely dusted with the chemicals. Rhizopon C contains alpha-naphthyl acetic acid methyl ester, while Belvitan K is also based on a growth stimulant. No details are available on the chemical composition of Depon (1). One disadvantage of all these preparations is the fact that they act as growth stimulants if they are used in too small a dose.

Agermin is based on an entirely different compound, phenyl urethane. Large-scale experiments have shown it to be nontoxic both to man and animals. It is capable of acting as a respiratory poison for plant cells and thus retards the respiration and sprouting of potatoes very efficiently, as L. Quantz (2, 3) has shown.

Bikartol is based on an effective substance which is very similar to phenyl urethane, namely, N-ethylphenylcarbam[illegible]c acid ethyl ester. It is produced, analogously to phenyl urethane by the reaction of monoethyl aniline with chloroformic acid ethyl ester. F. Kiermeyer (4) has proved it to be nontoxic.(4) On the other hand, H. A. Offe (5), basing his statements on the work of Druckrey

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and Hamperl (6) is of the opinion that phenyl urethane and N-ethylphenylcarbaminic acid ethyl ester, being unsulfonated aniline derivatives, should not be permitted for use in human consumption.

F. Grewe (7) has determined that Belvitan K has a fungistatic effect on pure cultures of Phytophthora infestans and Fusarium culmorum. However, this effect still has to be confirmed under actual storage conditions.

All the above preparations can be used only for treating potatoes to be used as food or as animal fodder. They are not suitable for treating seed potatoes, since the aftereffects will delay growth after sowing.

The progress made in conserving potatoes has been considerable, but no reliable chemical means of protecting them from rotting has been found. It is altogether questionable, considering the physiological peculiarities of potato rot, whether this can ever be accomplished by the use of chemicals.

Among growth-inhibiting preparations based on 2, 4 - D and used for weeding, the following may be mentioned: N 46 of the Badische Anilin and Soda Fabrik, H22 of the Bitterfeld Electrochemical Combine, and Elbanit of VVB Organa, Fahlberg-List, Magdeburg.

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